



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,240	11/13/2001	Padmapani C. Nallan	6493 / ETCH / SILICON	6869
32588	7590	04/30/2004	EXAMINER	
APPLIED MATERIALS, INC. 2881 SCOTT BLVD. M/S 2061 SANTA CLARA, CA 95050			KACKAR, RAM N	
			ART UNIT	PAPER NUMBER
			1763	

DATE MAILED: 04/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/993,240

Applicant(s)

NALLAN ET AL.

Examiner

Ram N Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-7,9,12-15,17-21 and 30-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-7,9,12-15,17-21 and 30-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4, 9, 12, 17, 20-21 and 30-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Wadensweiler et al (US 5978202).

Wadensweiler et al disclose a plasma processing reactor configured for etch (Fig 1), a thermal shim of disk shape (Fig 2a) or ring with a hole (Fig 2b), low thermal region and high thermal region either (Fig 2a-c-100, Col 2 lines 62- Col 3 lines 5, Col 4- lines 42-53, Col 7 lines 5-11, 36-40, 64-67 and Col 8 lines 1-26), adaptable to be placed under the electrostatic chuck and above the heat exchanger (Fig 1).

3. Claims 1, 4, 5, 9, 12, 13, 20-21 and 30-48 are rejected under 35 U.S.C. 102(b) as being anticipated by Shepard Jr. et al (US 5551983).

Shepard Jr. et al disclose a plasma processing reactor, a thermal shim of disk shape with holes empty or filled with different material (Fig 3-15 and Col 1 lines 57-64, Col 3 lines 1-26 and Cols 5 and 6), inherently low thermal region and high thermal region, adaptable to be placed under the retaining device (Col 5 lines 25-33) and above the heat exchanger.

4. Claims 1 is rejected under 35 U.S.C. 102(b) as being unpatentable over Fukutake et al (JP02128454).

Art Unit: 1763

Fukutake et al disclose disk shaped thermal die pad with a central region with different thermal conductivity than the peripheral region (Abstract and Fig 2 and 3).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5-6, 13-14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wadensweiler et al (US 5978202) in view of Kenji Kobayashi (JP 09027398)

Wadensweiler et al do not disclose the thermal shim to be made of a metal like aluminum.

Kenji Kobayashi discloses a thermal shim of aluminum having ring like shape (Fig 1-43, 71 and 73 and paragraph 0026).

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to use metal thermal shim for its good thermal conductivity.

7. Claims 7, 15 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wadensweiler et al (US 5978202) in view of Jones et al (US 5031689).

Wadensweiler et al do not disclose the thermal shim to be made of a corrugated material.

Jones et al disclose a thermal shim of a corrugated material (Fig 1-12 and 14).

Art Unit: 1763

Therefore it would have been obvious for one of ordinary skill in the art at the time invention was made to use a thermal shim of corrugated material so as not have problems due to differential thermal expansion between top and bottom surface.

Response to Amendment

Applicant's arguments filed 3/18/2004 have been fully considered but they are not persuasive.

Applicant argues that Wadensweiler et al do not disclose a disk shaped thermal shim made of two materials for central and outer region.

Wadensweiler discloses a shim in (Fig 2b with a different material (120, 100) on peripheral side and a different material on the inside (85) integrally formed with base. The conductivity of the outer part (120) of the shim could be adjusted to be higher or lower than that of central part (85).

It should be noted that the thermal shim is the disk segment, which includes 120 for outside material and 85 for inside material. As the heat transfer takes place across this whole volume of this lamina it is proper to refer to this as thermal shim. On the other hand the ring like structure of 120 may also sit on a flat pedestal where the material at the central region would be air.

However separable disk like thermal shims are also disclosed as taught by Shepard Jr. et al and Fukutake et al.

Art Unit: 1763

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 571 272 1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RK

*P. Hassan zadel
Primary Examiner
W1763*